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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/703,027	10/31/2000	Harry C. Blackmon	59182-PO12US-1002	9051

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EXAMINER

TON, ANTHONY T

ART UNIT	PAPER NUMBER
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2661

DATE MAILED: 02/04/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/703,027

Applicant(s)

BLACKMON ET AL.

Examiner

Anthony T Ton

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 October 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-35 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 October 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2. 6) ☐ Other: _____

DETAILED ACTIONS

Specification

1. The disclosure is objected to because of the following informalities:
 - a) Serial Number "[59182-p013US-10021642]" in page 1 line 2 and in page 6 line 7 is not appropriate. The examiner suggests changing this term to "09/703,043".
 - b) Serial Number "[59182-p014US-10021643]" in page 1 line 4 and in page 6 lines 9-10 is not appropriate. The examiner suggests changing this term to "09/703,604".
 - c) Term "to much" page 1 line 5 is not appropriate. The examiner suggests changing this term to "too much".

Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. **Claims 1-7, 9 and 10** are rejected under 35 U.S.C. 102(b) as being anticipated by Oren et al. (US 5,844,887).

a) **Regarding to Claim 1:** Oren et al. disclosed a fabric switching system configured for distributing information packets from multiple sources to multiple destinations within a network (see Fig. 5), comprising:

a plurality of input and output facility interface circuit cards (see port interface modules (PIMs) 50 and PIMs 51 in Fig. 5);

a plurality of line cards (see conjunction modules (JMs) 52 in Fig. 5) different from said facility interface circuit cards, said line cards being configured to perform packet forwarding functions (see Fig.9; and col.3 lines 26-28 and 46-54); and

wherein each of said facility interface circuit cards is connected to one said line card (see a connection of a PIM 50, JM 52 and PIM 51 via buses 90, 92, 94 and 96 in Fig. 5).

b) Regarding to Claim 2: The system of claim 1 wherein a redundant pair of said facility interface circuit cards is connected in parallel to each said line card, such that one said line card is connected to each of said paired redundant interface circuit cards (see Fig.5, col.3 lines 13-24 and see the connections in Fig.17).

c) Regarding to Claim 3: The system of claim 2 wherein said paired redundant interface circuit cards are configured to operate in a one-for-one protection mode (see col.5 lines 50-53 and col.20 lines 48-51 for detecting a failure).

d) Regarding to Claim 4: The system of claim 1, further comprising a control processor located on said line card, wherein said control processor is configured to control functions of said line card and of said facility interface circuit card connected to said line card (see Junction Controller 70 in Fig. 9 for the control processor).

e) Regarding to Claim 5: The claimed limitations of Claims 1 and 2 are similar to that in the Claim 5 except for each of the input and output interface ports comprising two paired duplicate interface circuit cards. However, Oren et al. also disclosed this

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limitation (see two dual port interface controllers in Fig.8; these two would be considered as the two paired duplicate interface circuit cards of this claim). Therefore, the rejections on Claims 1 and 2 and the rejection as described of Oren et al. would apply to the rejections on the Claim 5, in a communication network comprising a first system as taught.

f) Regarding to Claim 6: The communication network of claim 5 wherein said first system is disposed in a folded configuration (see Fig. 17, in which, interface cards 120 and 122 presenting for input interface cards, and interface cards 134 and 136 presenting for output interface cards; and wherein, these input and output interface cards are arranged to occupy in a same circuit board as shown in Fig.17. Therefore, Oren et al. would disclose a folded configuration as the claimed limitation of the claim 6), such that each of said paired duplicate interface circuit cards contains duplex input and output interface ports (see bi-directional arrows shown in a port interface module in Fig.8).

g) Regarding to Claim 7: The communication network of claim 5 wherein said first system is disposed in a folded configuration, such that each of said line cards is configured to perform both input and output packet forwarding functions (as the explanation in the Claim 6 for a folded configuration of the line cards; and see Fig.17, thereof the column fabric card 124, interface card 120, and connections between them. In this case, on row B data is transmitted from the interface card 120 (input) to the column fabric card 124 (output); on the other hand, on row D data is also transmitted

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from the card 124 (now it is input) to the card 120 (now it is output); also, see col.19 lines 60-65).

h) **Regarding to Claim 9:** The claimed limitations of Claim 5 are similar to that in the Claim 9, except for the second router system being interconnected with the first router system through duplicate data paths, such that each of said paired duplicate interface circuit cards of the first router system is interconnected to one of said paired duplicate interface circuit cards of said the second router system through one of said duplicate data paths. However, Oren et al. also disclosed this limitation (see interface cards 120, 122, 134 and 136 in Fig.17; wherein, the two interface cards 120 and 122 present for each of paired duplicate interface circuit cards in the first system, and the two interface cards 134 and 136 present for each of paired duplicate interface circuit cards in the second system. And see the connection on row A and C in Fig.17 for interconnecting of these two systems together). Therefore, the rejections on Claim 5 and the rejection as explained of Oren et al. would apply to the rejections on the Claim 9, in a communication network comprising a first system and a second system as taught.

i) **Regarding to Claim 10:** The claimed limitations of Claim 6 are similar to that in the Claim 10. Therefore, the rejections on Claim 6 of Oren et al. would apply to the rejections on the Claim 10.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

5. The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

6. **Claims 1 and 2** are rejected under 35 U.S.C. 102(e) as being anticipated by Lamberg et al. (US 6,408,000).

a) **Regarding to Claim 1:** Lamberg et al. disclosed a multicast data distribution system configured for distributing information packets from multiple sources to multiple destinations within a network (see Fig. 3 and col.2 lines 36-49), comprising:

a plurality of input and output facility interface circuit cards (see MPR 20A and MPR 20B in Fig.3 for input facility interface circuit cards, and see ports 32 and 36 in Fig.2 for output facility interface circuit cards);

a plurality of line cards (see 21A and 21B in Fig.3) different from said facility interface circuit cards, said line cards being configured to perform packet forwarding functions (see col.3 lines 25-29); and

wherein each of said facility interface circuit cards is connected to one said line card (see the connections on 20A to 21A and 21B in Fig.3).

b) **Regarding to Claim 2:** The system of claim 1 wherein a redundant pair of said facility interface circuit cards is connected in parallel to each said line card, such that one said line card is connected to each of said paired redundant interface circuit cards (see the connection on 20A to 21A and 21B, and 20B to 21C and 21D in Fig.3).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. **Claims 8, 23, 24, 26-29, 34 and 35** are rejected under 35 U.S.C. 103(a) as being unpatentable over Oren et al. (US 5,844,887).

a) **Regarding to Claim 8:** The communication network of claim 5 wherein said first system comprises 320 input interface ports and 320 output interface ports.

Oren et al. did not explicitly disclose the first system that comprises 320 input interface ports and 320 output interface ports. However, Oren et al. clearly disclosed his invention in 8 x 8 configuration, in 4 x 4 configuration, and in 16 x 16 configuration

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(see col.7 lines 7-14), or in any $M \times M$ configuration of a switching fabric (see col.20 lines 28-30). Therefore, it would have been obvious to one of ordinary skilled in the art to provide such 320 input interface ports and 320 output interface ports throughout the $M \times M$ configuration of Oren et al., as taught by Ramaswami because M not only is an integer, but it can be any number depending on a design choice of such input and output interface ports.

b) **Regarding to Claim 23:** Oren et al. disclosed a method of distributing data streams within a communication system containing a plurality of router systems, said method comprising:

receiving duplicate data streams at two-paired duplicate interface circuit cards of a first router system (see "circles" on rows I and J in Fig. 17, which present receiving duplicate data streams at two-paired duplicate interface circuit cards on the interface cards 120 and 122, and col.19 lines 64-65);

delivering said duplicate data streams from said duplicate interface circuit cards to a line card separate from said two paired duplicate interface circuit cards (see "squares" in row E on the interface cards 120 and 122 in Fig.17, which present delivering the duplicate data streams from the duplicate interface circuit cards to a line card (i.e. the fabric card 124 in Fig.17)).

examining said duplicate data streams in accordance with predetermined selection criteria (in Fig.8, Oren et al. showed STS-3 devices, wherein, in SONET each STS-3/OC-3 (synchronous transport signal/optical signal) device communicating at a

speed of 155.52 Mbps, and this would be considered as a predetermined selection criteria, see col.8 line 62 – col.9 line 1 for examining the duplicate data streams);

if one said duplicate data stream satisfies said criteria and the second said duplicate data stream does not satisfy said criteria, then selecting said duplicate data stream that satisfies said criteria and discarding said duplicate data stream that does not satisfy said criteria. Oren et al. did not explicitly disclose this claimed limitation. However, Oren et al. inherently disclosed this claimed limitation because Oren et al. disclosed that when a failure is detected (this implies that the duplicate data stream doesn't meet the predetermined selection criteria because the failure occurs), the interface card is instructed to start transmitting the data stream on a redundant link (see col.20 lines 48-56 and Fig.17). And by this manner, the unsatisfied duplicate data stream (caused by any internal failure) would be automatically discarded without any further intervention required. Therefore, it would have been obvious to one of ordinary skill in the art can provide such a claimed limitation throughout the failure detection of Oren et al., as taught by the applicant, in order to choose a valid data and get rid of the un-valid data (caused by the internal failure) to make a system more reliable.

Oren et al. also failed to teach the following step: if both of said duplicate data streams satisfy said criteria, then arbitrarily selecting one of said duplicate data streams and arbitrarily discarding the non-selected duplicate data stream. Even though Oren et al. did not teach a method of arbitrarily selecting one of the duplicate data streams and arbitrarily discarding the non-selected duplicate data stream, it is just a default method of data selection, a software program can set such a default for arbitrary selection one

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of the duplicate data streams and arbitrary discarding the non-selected duplicate data stream. Therefore, it would have been obvious to one of ordinary skill in the art can provide such a method as taught by the applicant so that any satisfied duplicate data stream can be chosen or discarded either on a working link or protecting link for processing the data streams more faster.

c) **Regarding to Claim 24:** The method of claim 23 wherein said duplicate data streams are received through redundant data paths from a second router system within said communication system (see "squares" on the interface card 136 that present sending data to column fabric card 132 (circles present receiving data) in Fig.17; and col.19 lines 64-65);

d) **Regarding to Claim 26:** The method of claim 23 wherein said examining, said selecting, and said discarding are performed at said line card (see last sentence in Abstract: "The addition of one spare fabric card provides the means to provide redundancy in the event one of the regularly operating fabric cards fails.").

e) **Regarding to Claim 27:** The method of claim 23, further comprising performing packet forwarding functions (see col.3 lines 46-54).

f) **Regarding to Claim 28:** The method of claim 27 wherein said packet forwarding functions are performed at said line card (as described in the Claim 26 above).

g) **Regarding to Claim 29:** The method of claim 23 wherein said distribution of data streams is not interrupted by an occurrence selected from the group consisting of malfunction, failure, removal, and replacement of one of said two paired duplicate

interface circuit cards (see the connections between interface cards 120, 122, 134 and 132, and fabric cards 124, 126, 130 and 132, and redundant fabric card 128 in Fig.17. Wherein, when one of the fabric cards fails, the redundant fabric card 128 receives all signals from each of the interface cards. Therefore, any failed card can be removed and replaced without any interruption. Also, see col.21 lines 3-5).

h) **Regarding to Claim 34:** The method of claim 24 wherein routing addresses across said communication network are not changed by an occurrence within said first router system selected from the group consisting of malfunction, failure, removal, and replacement of one of said two paired duplicate interface circuit cards, such that data rerouting and route-flap are prevented in said second router system and are not broadcast in part or as a whole across said communication network (see the connections between interface cards 120, 122, 134 and 132, and fabric cards 124, 126, 130 and 132, and redundant fabric card 128 in Fig.17. Wherein, when one of the fabric cards fails, the redundant fabric card 128 receives all signals from each of the interface cards. Therefore, any failed card can be removed and replaced without any interruption. Also, see col.21 lines 3-5 for route-flap i.e. rerouting messages continuously through a network; therefore, addresses across a communication network are not changed because data packets that transmitted through the redundant port has the same destination addresses).

i) **Regarding to Claim 35:** The method of claim 24 wherein an occurrence of a failure within said data paths interconnecting said first router system with said second router system is detected and corrected independently by each of said first router

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system and said second router system, such that control communication between said first router system and said second router system is not required (see col.20 line 66 – col.21 line 5).

9. **Claims 11-22, 32 and 33** are rejected under 35 U.S.C. 103(a) as being unpatentable over Oren et al. (US 5,844,887) in view of Ramaswami et al. (US 6,597,826).

a) **Regarding to Claim 11:** The communication network of claim 5 wherein said first system further comprises an optical switch having an N by M crossbar configuration, said optical switch being located within the core of the router system and having a plurality of ingress ports and a plurality of egress ports, wherein N is the integer number of ingress ports and M is the integer number of egress ports of said optical switch.

Oren et al. did not explicitly disclose an optical switch located within the core of the system. However, Oren et al. disclosed ATM switches that allocate bandwidth on demand, in addition, ATM does not specify any specific rates or physical media, allowing it to scale support a variety of user requirements (see col.2 lines 2-8). Oren et al. also disclosed typical port interfaces include STS-3 (SONET standard) and DS-3 (see col.1 lines 55-56). Ramaswami et al. explicitly disclosed an optical cross-connect switching system and its corresponding method perform a bridging operation by splitting the incoming light signal into at least a first bridged light signal and a second bridged light signal. Light signals are routed through multiple switch fabrics, which provide redundancy in case of failure by switching within the switch fabric.

Basically, Oren et al. failed to teach an optical switch in his invention. However, Ramaswami et al. clearly taught such an optical switch (see 240 and 260 in Fig.12).

Therefore, it would have been obvious to one of ordinary skilled in the art to provide such an optical switch throughout the ATM fabric switch of Oren et al., as taught by Ramaswami et al. so that such an optical switch can be used to transmit and receive data packets in a high data rate.

b) Regarding to Claims 12-22: Claim 12: the communication network of claim 11 wherein N is equal to M; Claim 13: the communication network of claim 11 wherein N is not equal to M; Claim 14: the communication network of claim 12 wherein N is greater than 10; Claim 15: the communication network of claim 14 wherein N is greater than 40; Claim 16: the communication network of claim 15 wherein N is greater than 60; Claim 17: the communication network of claim 13 wherein N and M are each greater than 10; Claim 18: the communication network of claim 17 wherein N and M are each greater than 40; Claim 19: the communication network of claim 18 wherein N and M are each greater than 60; Claim 20: the communication network of claim 11 wherein said first router system further comprises a plurality of said optical switches; Claim 21: the communication network of claim 9 wherein each of said duplicate data paths comprises an optical fiber; and Claim 22: the communication network of claim 21 wherein each of said duplicate data paths comprises duplex optical fibers.

Oren et al. did not explicitly teach such claimed limitations of Claims 12-22. However, the subject matters of the claimed limitations of the claims 12-22 is a design choice because it would have been obvious to one of ordinary skilled in the art to

provide such claimed limitations throughout the switching fabric configurations 4x4, 8x8, 16x16, and M x M of Oren et al. as described in the claim 8 above.

c) **Regarding to Claims 32 and 33:** Claim 32: the method of claim 24 wherein said redundant data paths comprise optical fibers. Claim 33: the method of claim 32 wherein said redundant data paths comprise duplex optical fibers.

Oren et al. failed to teach the redundant data paths that comprise duplex optical fibers. Ramaswami et al. clearly taught such optical fibers (see boxes 240 and 260 in Fig.12). Therefore, it would have been obvious to one of ordinary skilled in the art to provide such optical fibers throughout the STS-3 of Oren et al., as taught by Ramaswami et al. in order to increase bandwidth and avoid of electromagnetic interference as well as increase data transmission rates.

10. **Claims 25, 30 and 31** are rejected under 35 U.S.C. 103(a) as being unpatentable over Oren et al. (US 5,844,887) in view of Bromley et al. (US 6,658,021).

a) **Regarding to Claim 25:** The method of claim 23 wherein said predetermined selection criteria include criteria selected from the group consisting of a SONET standard (see Oren et al. col.1 lines 55-56), a packet-over-SONET protocol, and an ETHERNET protocol (see Oren et al. col.1 lines 48-50).

Oren et al. failed to teach a packet-over-SONET protocol. Bromley et al. implicitly disclosed such a packet-over-SONET protocol (see col.6 lines 5-10). Therefore, it would have been obvious to one of ordinary skilled in the art to provide such a packet-over-SONET protocol throughout the STS-3 and ATM packet protocol of Oren et al., as taught by Bromley et al. so that data packets can be used in a SONET.

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b) **Regarding to Claims 30 and 31:** Claim 30: The method of claim 23 wherein said received data streams comprise information packets encapsulated into frames. Claim 31: The method of claim 30, further comprising extracting said information packets from said frames after receiving said data packets and before delivering said data packets to said line card.

Oren et al. failed to teach encapsulated and de-encapsulated packets. Bromley et al. taught such packets (see col.1 lines 27-30). Therefore, it would have been obvious to one of ordinary skilled in the art to provide such packets throughout the ATM fabric switch of Oren et al., as taught by Bromley et al. in order to provide adaptation for such packets in another network.

Conclusion

11. The prior art made of record is considered pertinent to applicant's disclosure is relating to the field of identical input packets are transmitted via redundant input port interfaces: Rochberger et al. (US 6,272,107); Matsuno et al. (US 6,661,772); Anderson et al. (US 6,477,139); Nakata (US 6,452,934); Linnell (US 6,571,355); Sakamoto et al. (US 6,075,767); Fatehi (US 4,878,726); Madonna (US 6,118,779); and Galway et al. (US 6,650,646).

Examiner Information

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony T Ton whose telephone number is 703-305-8956. The examiner can normally be reached on M-F: 8:00 am - 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Douglas W Olms can be reached on 703-305-4703. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

ATT



**KENNETH VANDERPUYE
PRIMARY EXAMINER**